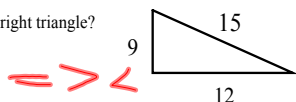


4.5 The Converse of the Pythagorean Theorem

Is the triangle a right triangle?

 \Rightarrow

$$\begin{array}{rcl}
 c^2 & ? & a^2 + b^2 \\
 15^2 & & 9^2 + 12^2 \\
 225 & = & 81 + 144 \\
 & & 225
 \end{array}$$

QUIZ
Thurs
Rev/Quiz

If $c^2 = a^2 + b^2$, then the triangle is a right triangle.If $c^2 > a^2 + b^2$, then the triangle is an obtuse triangle.If $c^2 < a^2 + b^2$, then the triangle is an acute triangle.

c is the longest side

What type of triangle is represented by the given sides?

Examples:

3, 5, 7

$$\begin{array}{rcl}
 7^2 & ? & 3^2 + 5^2 \\
 49 & > & 9 + 25 \\
 & & 34
 \end{array}$$

Obtuse

7, 7, 7

$$\begin{array}{rcl}
 7^2 & < & 7^2 + 7^2 \\
 49 & & 49 + 49 \\
 & & 98
 \end{array}$$

Acute

10, 12, 6

$$\begin{array}{rcl}
 12^2 & > & 6^2 + 10^2 \\
 144 & & 36 + 100 \\
 & & 136
 \end{array}$$

Obtuse

15, 20, 25

Right

~~9, 7, 11~~~~10, 24, 30~~

$$\begin{array}{rcl}
 25^2 & = & 15^2 + 20^2 \\
 625 & = & 225 + 400 \\
 & & 625
 \end{array}$$

$$5, \sqrt{8}, 7$$

obtuse

$$7^2 > 5^2 + \sqrt{8}^2$$

$$49 > 25 + 8$$

$$49 > 33$$

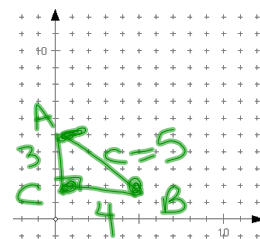
$$\sqrt{64}$$

Distance Formula

Do Not Write!
A(1, 5)

B(5, 2)

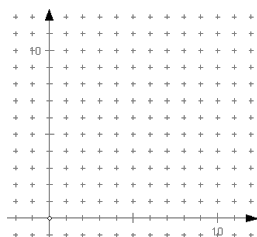
C(1, 2)

Find \overline{AB} 

$$c^2 = 3^2 + 4^2$$

$$c^2 = 9 + 16$$

$$c^2 = 25$$

In General

Write this!

The Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Ex:

D(1, 4)

E(3, -2)

$$DE = \sqrt{(1-3)^2 + (4-(-2))^2}$$

$$DE = \sqrt{4 + 36}$$

$$DE = \sqrt{40} = 2\sqrt{10}$$

$$\approx 6.32$$

J(-1, 7)
K(5, -1)

$$d = \sqrt{\underset{-6}{(-1-5)^2} + \underset{8}{(7-(-1))^2}}$$
$$d = \sqrt{36 + 64}$$
$$d = \sqrt{100}$$
$$d = 10$$

HW

p197 27-29 Do not round.

p204 18-23, 25-30